Section 2. ESDIS System Interfaces

2.1 Categories of Interfaces

The EOSDIS is physically distributed around the United States and is connected to affiliated facilities in the U.S., Canada, Japan, and other countries. Interaction and support agreements between the U.S. Government and foreign countries, between NASA and other agencies in the U.S. or foreign governments, and between NASA Headquarters and NASA centers are controlled at NASA Headquarters. These support agreements must be translated into EOS Level 1 requirements for system development by the ESDIS Project or other projects within EOS. These Level 1 requirements are the basis for development projects and interface definition through expansion by the ESDIS Project into lower levels (Levels 2 and 3) of detailed requirements. The interfaces controlled by ESDIS are identified in EOS Level 1 requirements and ESDIS Level 2 and Level 3 requirements. Identification and control of interfaces at Level 4 and below are the responsibility of the ESDIS-funded projects or are assigned to institutional systems.

The ESDIS-controlled interfaces of the EOSDIS are categorized as follows:

- Interfaces with flight projects
- Interfaces with external organizations
- Interfaces between EOSDIS projects and from contracts (internal interfaces for EOSDIS)
- Interfaces with NASA institutional systems

The documentation concerning the definition of those interface categories is as follows:

- ***Interproject Agreements (IPAs)***—These documents are agreements between ESDIS and projects not managed by ESDIS. Generally, the projects involved agree on an exchange of support services and data. From the interface control viewpoint, these agreements identify the need for an interface and the scope of the interface.
- ***IRDs***—IRDs define the requirements for data exchanges across an interface between separately managed systems or subsystems. The requirements statements in IRDs are directly derived from project requirements documents.
- ***ICDs***—ICDs are used to record design agreements for the interfaces between participating organizations. ICDs provide a means to evaluate and control all mutually interdependent and/or interacting design parameters of the interface.
- ***Detailed Mission Requirements (DMRs) and Mission-Specific Requirements Documents (MSRDs)***—DMRs and MSRDs contain the results of the requirements identification and derivation activities and provide the basis for system design for individual missions.

- ***Data Format Control Documents (DFCDs)***—These documents define the formats of data units that are transferred across an interface and the control codes used in the data formats.

- ***Commercially Implemented Standards***—These are standard interfaces produced for commercial availability, and they can be specified for interface design control without specifying the detailed design requirements.

- ***Operations Agreements***—These are even lower level, more detailed interface documents that are created to help define the operations use of the interfaces, including such things as addresses, phone numbers, and names of responsible personnel. These documents are not intended for project-level development and control.

2.2 Interfaces Subject to ICP Control

At this time, almost 100 interface documents are identified in this plan as being under the control of the ESDIS Project. Approximately one half of these are in current baseline control. Figure 2-1, EOSDIS Interface Diagram, shows the interfaces and identifies the interface documents between the many organizations that make up the EGS and its major component, the EOSDIS. Figure 2-1 is in the form of an N-squared chart to give a visual impression of the breadth of interfaces involved. Some version and release notation is also included to show relative time of implementation. The contracts, projects, and development efforts in this figure are broken down into smaller components to unambiguously identify the interfaces and their intended scope. Each interface document is assigned a unique identifying number and/or letter combination.

This same information about these same interface documents is contained in Tables 2-1 and 2-2, along with a definitive name and other identifying notation, including what organizations are involved in their development and approval.

All of these documents are discussed and reviewed by the ICWG, and most of them are approved there. A few documents, such as the DMR for the AM-1 Project, are reserved for approval by the ESDIS CCB and the AM-1 Project. Some documents are project unique (e.g., AM-1 DMR), and those are only reviewed by the ICWG and ESDIS Projects. The schedules in Appendix C identify the few documents that are only reviewed.

The following sections briefly discuss the interface categories and documents associated with the interfaces.

2.3 Interfaces With Flight Projects

ESDIS provides EOSDIS system capabilities needed by the flight projects and instrument teams to conduct their mission operations, capture and archive mission data, and produce data products. The flight projects provide project-unique databases, software, and subsystems. Flight project personnel provide expertise for implementing the mission operations system using EOSDIS. High-level agreements between ESDIS and each flight project are documented in an IPA or a memorandum of understanding (MOU). The EOS Level 1 requirements contain the requirements for ESDIS to establish interfaces with the flight projects. These agreements and requirements form the basis for the specific interface documents (IRDs and ICDs) for each project and are expressed in lower level documentation as well as in other documentation and agreements.

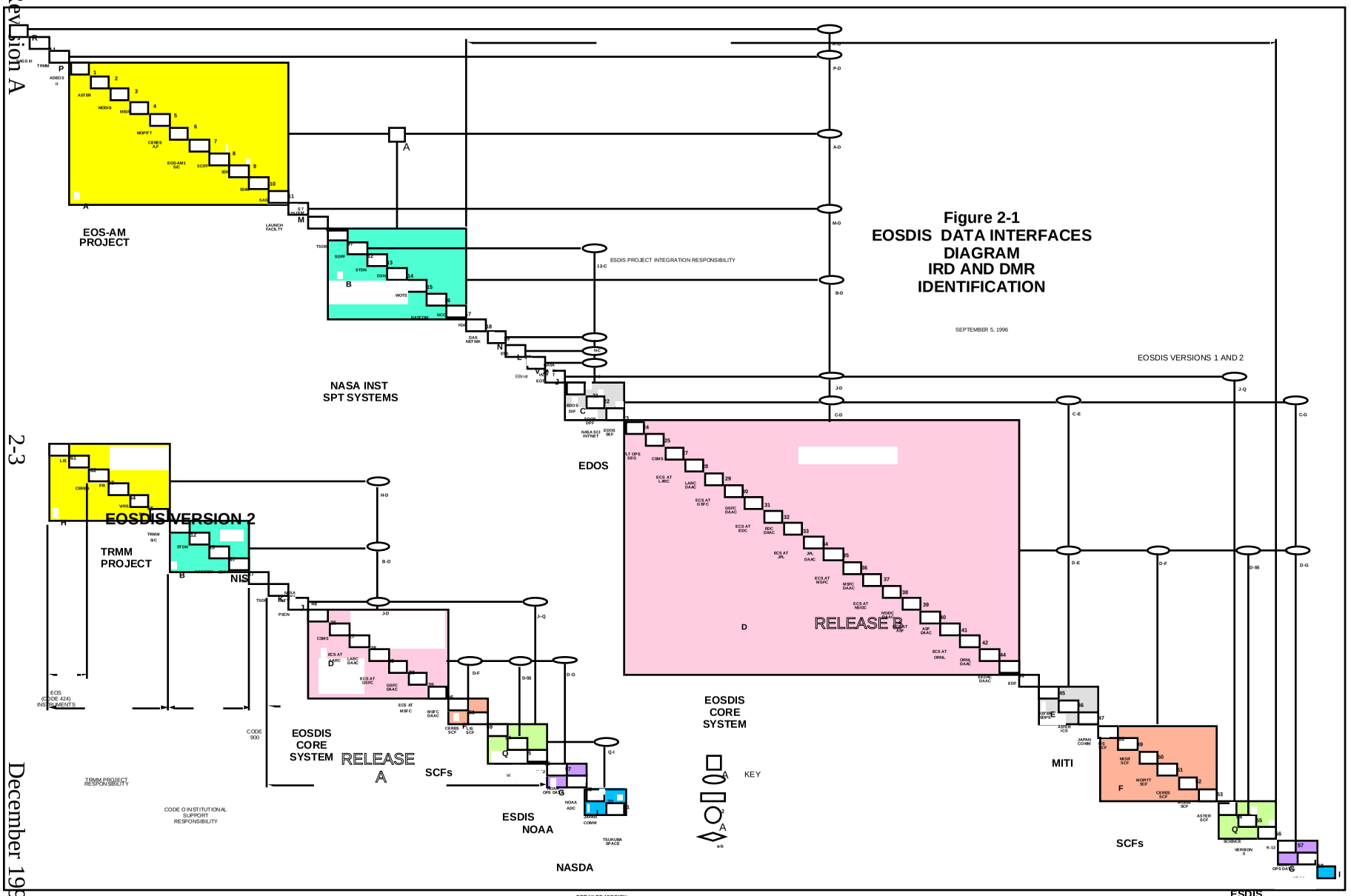

Figure 2-1
EOSDIS DATA INTERFACES DIAGRAM
IRD AND DMR IDENTIFICATION

SEPTEMBER 5, 1996

Figure 2-1. EOSDIS Data Interfaces Diagram—IRD Identification (1 of 3)

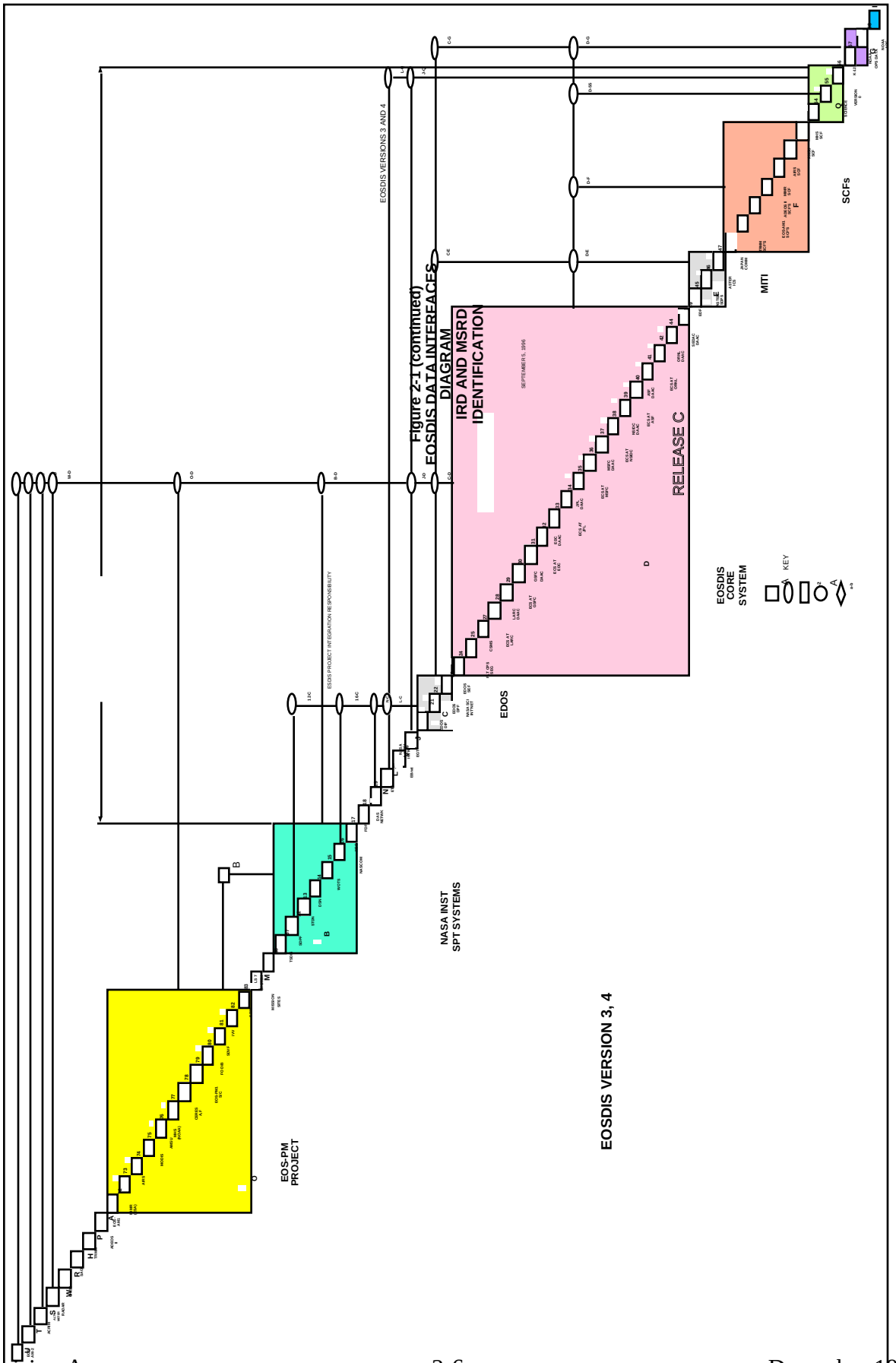
Figure 2-1 (continued)
EOSDIS DATA INTERFACES DIAGRAM
IRD AND MSRD IDENTIFICATION
SEPTEMBER 5, 1996
EOSDIS VERSIONS 3 AND 4
EOSDIS PROJECT INTEGRATION RESPONSIBILITY
RELEASE C
EOSDIS CORE SYSTEM
EDOS
NASA INST SPT SYSTEMS
EOS-PM PROJECT
EOSDIS VERSION 3, 4
MITI
SCFs
ESDIS
NOAA
NASDA
KEY
MISSION-SPECIFIC INSTRUMENT IRD (PROJECT)
INTERFACE REQUIREMENTS DOCUMENTS (IRD)
INTERFACE CONTROL DOCUMENTS (ICD)
DATA FORMAT CONTROL BOOKS (CONTROLLER)
INTERAGENCY MEMO OF UNDERSTANDING

Figure 2-1. EOSDIS Data Interfaces Diagram—IRD Identification (2 of 3)

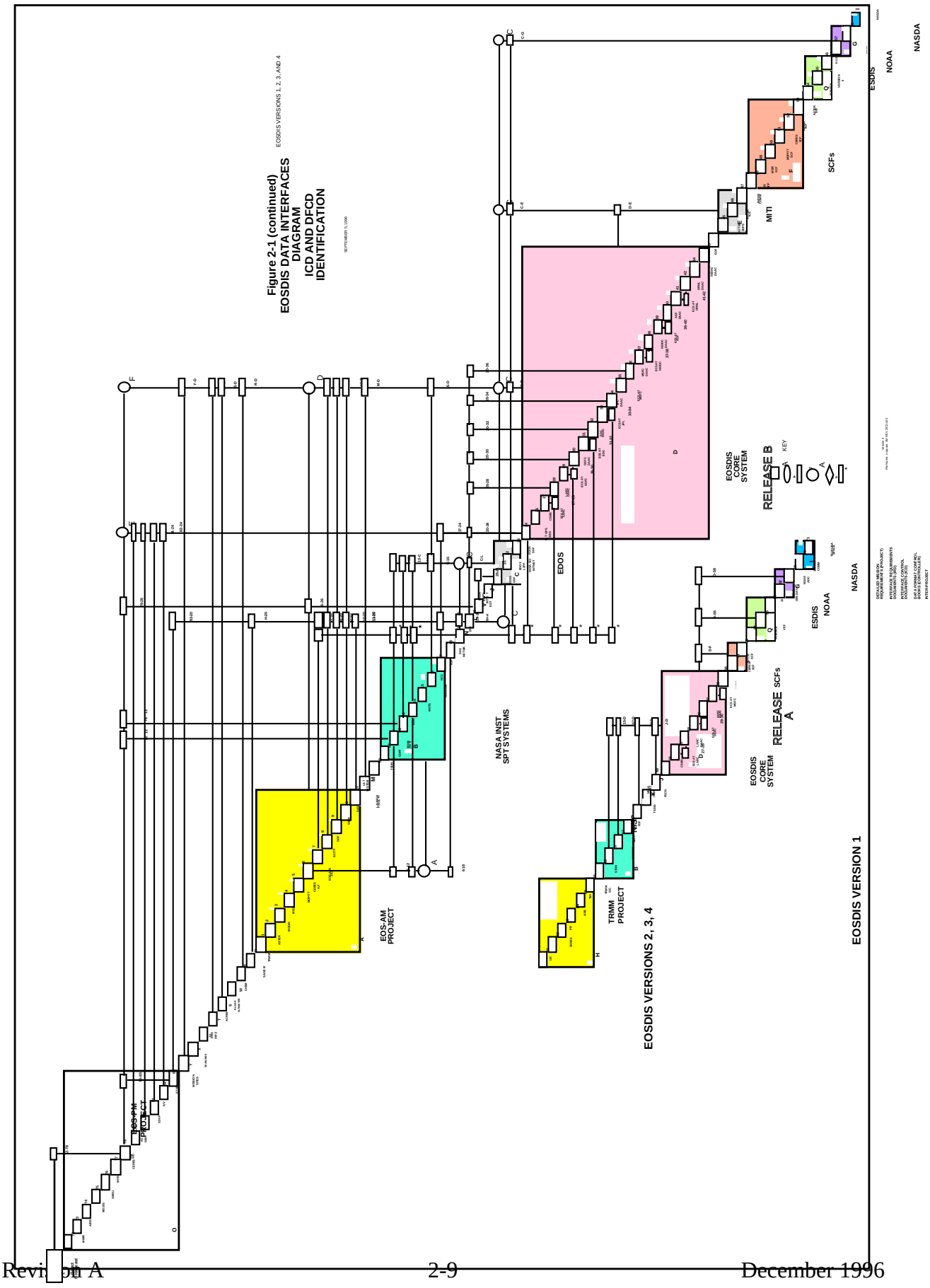

Figure 2-1 (continued)
EOSDIS DATA INTERFACES DIAGRAM
ICD AND DFCD IDENTIFICATION

Figure 2-1. EOSDIS Data Interfaces Diagram—IRD Identification (3 of 3)

Table 2-1. EOSDIS Data Interfaces—IRD, DMR, and MSRD

N SQ. NO.	DOCUMENT	PARTIES	ESDIS NO.	COMMENTS
D-55	194-219-SE1-004 IRD BETWEEN THE ECS AND THE VERSION 0 SYSTEM	ECS, ESDIS, DAACs	505-41-11	VERSION 1/2/3/4 01
D-F	194-219-SE1-005 IRD BETWEEN THE ECS AND SCFs	ECS, ESDIS	505-41-12	VERSION 1/2/3/4 02
J-D	219-CD-001-004 IRD BETWEEN THE ECS AND THE NSI	ECS, ESDIS, NSI	505-41-17	VERSION 1/2/3/4 03
D-G	219-CD-006-003 IRD BETWEEN ECS AND THE NOAA AFFILIATED DATA CENTERS	ECS, ESDIS, NOAA	505-41-19	VERSION 1/2/3/4 04
B-D	194-219-SE1-020 IRD BETWEEN THE ECS AND THE NISS	ECS, ESDIS, MODSD	505-41-21	VERSION 1/2/3/4 05
H-D	194-219-SE1-018 IRD BETWEEN ECS AND THE TRMM GROUND SYSTEM	ECS, ESDIS, TRMM	505-41-14	VERSION 1 06
D-E	194-219-SE1-002 IRD BETWEEN THE ECS AND MITI ASTER GDS PROJECT	ECS, ESDIS, MITI	505-41-18	VERSION 2 07
A-D	194-219-SE1-019 IRD BETWEEN ECS AND EOS AM PROJECT FOR AM-1 FLIGHT OPS	ECS, ESDIS, EOS-AM	505-41-15	VERSION 2 08
M-D	219-CD-003-002 IRD BETWEEN ECS AND THE LANDSAT 7 SYSTEM	ECS, ESDIS, LANDSAT 7	505-41-13	VERSION 2 09
P-D	219-CD-028-001 IRD BETWEEN ECS AND THE SEAWINDS PROJECT	ECS, SEAWINDS, NASDA, ESDIS	505-41-23	VERSION 2 10
R-D	219-CD-027-002 IRD BETWEEN ECS AND THE SAGE III PROJECT	SAGE III, ESDIS	505-41-22	VERSION 2 11
O-D	194-219-SE1-024 IRD BETWEEN ECS AND THE EOS PM-1	ECS, ESDIS, EOS PM	505-41-25	VERSION 3 15
J-D	223-CD-001-002 ECS EXTERNAL DATA TRAFFIC REQUIREMENTS	ECS, NSI	505-41-52	VERSION 1/2/3/4 19
C-D C-E C-G	560-EDOS-0211.0001R1 IRD BETWEEN EDOS AND THE EOS GROUND SYSTEM ELEMENTS	EDOS, ECS, ESDIS MITI NOAA		VERSION 2 20
V-C	IRD BETWEEN EDOS AND EOSDIS GROUND TERMINALS	EDOS, MODSD, ESDIS		VERSION 3 21
12-C	560-EDOS-0211.0003R1 IRD BETWEEN EDOS AND THE TDRSS GROUND TERMINAL (TGT)	EDOS, STDN, ESDIS		VERSION 2 22
L-C (A)	560-EDOS-02111.0004R1 IRD BETWEEN EDOS AND THE EOSDIS BACKBONE NETWORK (EBnet)	EDOS, EBnet, ESDIS		VERSION 2 23
N-C	560-EDOS-0211.0009R1 IRD BETWEEN EDOS AND THE EOSDIS TEST SYSTEM	EDOS, ETS		VERSION 2 24
J-Q	NON-ECS EOSDIS ELEMENTS NSI IRD	ECS, ESDIS, NSI		VERSION 1/2/3/4 27
Q-1	ADEOS II PROJECT IRD	ESDIS, NASDA, JPL		VERSION 2/3/4 28
A	DETAILED MISSION RQMTS FOR THE EOS-AM1 SPACECRAFT	EOS-AM PROJECT, ESDIS, MODSD		VERSION 2 30
S-D	IRD BETWEEN ECS AND RADAR ALTIMETER	ECS/HAIS, RADAR ALT		VERSION 2/3/4 31
T-D	IRD BETWEEN ECS AND ACRIM	ECS/HAIS, ESDIS, ACRIM		VERSION 2 32
W-D	IRD BETWEEN ECS AND CHEM	ECS/HAIS, ESDIS CHEM		VERSION 4 33
J-D	IRD BETWEEN ECS AND AM-2	ECS/HAIS, ESDIS, AM-2		VERSION 4 34
L-Q	EBnet IRD 540-022	EBnet, ESDIS		VERSION 1/2/3/4 35
B	MISSION-SPECIFIC RQMTS FOR THE EOS-PM1 SPACECRAFT	EOS-PM PROJECT, ESDIS, MODSD		VERSION 3 36
X-D	IRD BETWEEN ECS AND DAS	ECS/HAIS, ESDIS, DAS		VERSION 2/3/4 37

Table 2-2. EOSDIS Data Interfaces—ICD and DFCD (1 of 3)

N SQ. NO.	DOCUMENT	PARTIES	ESDIS NO.	COMMENTS
D-55	209-CD-011-004 ICD BETWEEN THE ECS AND THE VERSION 0 SYSTEM	ESC/HAIS, ESDIS	505-41-30	VERSION 1/2/3/4 01
D-F	209-CD-005-005 ICD BETWEEN THE ECS AND THE SCFs	ECS/HAIS, ESDIS	505-41-33	VERSION 1/2/3/4 02
J-D	209-CD-001-003 ICD BETWEEN THE ECS AND THE NSI	ECS/HAIS, ESDIS, NSI	505-41-31	VERSION 1/2/3/4 03
M-D	209-CD-013-004 (ECS) ICD BETWEEN ECS AND THE LANDSAT 7 SYSTEM	ECS/HAIS, LANDSAT 7	505-41-32	VERSION 2 04
D-E	209-CD-002-004 ICD BETWEEN THE ECS AND THE ASTER GDS	ECS/HAIS, ESDIS, MITI	505-41-34	VERSION 2 05
68-D	209-CD-007-004 ICD BETWEEN ECS AND TSDIS	ECS/HAIS, ESDIS, TSDIS	505-41-35	VERSION 1 06
D-58	209-CD-006-005 ICD BETWEEN THE ECS AND THE NOAA ADC	ECS/HAIS, ESDIS, NOAA	505-41-36	VERSION 1/2/3/4 07
8-D	209-CD-025-003 (ECS) ICD BETWEEN ECS AND SDVF (AM-1)	ECS/HAIS, EOS-AM PROJECT/LOCKHEED MARTIN	505-41-37	VERSION 2 09
10-D	209-CD-003-003 (ECS) ICD BETWEEN ECS AND EOS-AM PROJECT FOR S/C ANALYSIS SOFTWARE	ECS/HAIS, EOS-AM PROJECT/ LOCKHEED MARTIN	505-41-38	VERSION 2 10
(D)	209-CD-004-004, DATA FORMAT CONTROL DOCUMENT FOR THE EOS AM1 PROJECT DATABASE	ECS/HAIS, EOS-AM PROJECT/LOCKHEED MARTIN		VERSION 2 11
41-42	209-CD-022-003 ICD BETWEEN THE ECS AND THE ORNL DAAC	ECS/HAIS, ESDIS, ORNL	505-41-42	VERSION 2/3/4 12
39-40	209-CD-021-002 ICD BETWEEN THE ECS AND THE ASF DAAC	ECS/HAIS, ESDIS, ASF	505-41-43	VERSION 2/3/4 13
27-28	209-CD-010-005 ICD BETWEEN THE ECS AND THE LARC DAAC	ECS/HAIS, ESDIS, LARC DAAC	505-41-39	VERSION 1/2/3/4 15
29-30	209-CD-008-006 ICD BETWEEN THE ECS AND THE GSFC DAAC	ECS/HAIS, ESDIS, GSFC DAAC	505-41-40	VERSION 1/2/3/4 16
33-34	209-CD-TBD-001 ICD BETWEEN THE ECS AND THE JPL DAAC	ECS/HAIS, ESDIS, JPL DAAC	505-41-44	VERSION 2/3/4 17
37-38	209-CD-TBD-001 ICD BETWEEN THE ECS AND THE NSIDC DAAC	ECS/HAIS, ESDIS, NSIDC	505-41-45	VERSION 2/3/4 19
C-D	510-ICD-EDOS/EGS (TRW) ICD BETWEEN EDOS AND THE EOS GROUND SYSTEM	EDOS/TRW, ECS/HAIS		VERSION 2 21
C-12	510-ICD-EDOS/TGT (TRW) ICD BETWEEN EDOS AND THE TDRSS GROUND TERMINALS (TGT)	EDOS/TRW, STDN		VERSION 2 23
C-L	510-ICD-EDOS/EBnet (TRW) ICD BETWEEN EDOS AND Ebnet	EDOS/TRW, Ebnet		VERSION 2 24
C-N	510-ICD-EDOS/ETS (TRW) ICD BETWEEN EDOS AND ETS	EDOS/TRW, ETS/CSC		VERSION 2 25
C-G	510-ICD-EDOS/NOAA (TRW) ICD BETWEEN EDOS AND NOAA	EDOS/TRW, NOAA		VERSION 2 26
C-E	510-ICD-EDOS/ASTER (TRW) ICD BETWEEN EDOS AND THE ASTER GROUND DATA SYSTEM (GDS)	EDOS/TRW, MITI-ASTER		RELEASE B 27
20-24	540-031 ICD BETWEEN EBnet AND GSFC EOC	EBnet, ECS/HAIS		RELEASE B 28
17-20	540-034, ICD BETWEEN EBnet AND FDF	EBnet, FDF		RELEASE B 29
11-20	540-097 ICD BETWEEN EBnet AND THE LAUNCH PROCESSING FACILITY	EOS-AM PROJECT/ LOCKHEED MARTIN		RELEASE B 31

Table 2-2. EOSDIS Data Interfaces—ICD and DFCD (2 of 3)

N SQ. NO.	DOCUMENT	PARTIES	ESDIS NO.	COMMENTS
7-20	540-091 ICD BETWEEN EBnet AND SCS	EBnet EOS-AM PROJECT/ LOCKHEED MARTIN		RELEASE B 32
19-20	540-046 ICD BETWEEN EBnet AND ETS	EBnet, ETS		RELEASE B 33
20-34	540-032 ICD BETWEEN EBnet AND DAACs	EBnet, DAACs		RELEASE B 34
20-32	540-037 ICD BETWEEN EBnet AND ASTER/GDS	EBnet, MITI		RELEASE B 35
20-30	540-094 ICD BETWEEN EBnet AND FSTB	EBnet, MODSD		RELEASE B 36
20-28	540-093 ICD BETWEEN EBnet AND GSE	EBnet, LOCKHEED MARTIN		RELEASE B 37
20-36	540-036 ICD BETWEEN EBnet AND SMC	EBnet, ESDIS		RELEASE B 38
13-C	APPENDIX AA ICD GSFC TO JPL FOR MISSIONS USING DSN	DSN, EDOS/TRW, EBnet		RELEASE B 39
14-C	APPENDIX F ICD MO&DSD TO WOTS	EDOS/TRW, WOTS, EBnet		RELEASE B 40
16-D	530-NCCDS-TBD ICD BETWEEN THE GSFC MOCs AND THE NCCDS	STDN, ECS/HAIS, EDOS/TRW, EBnet		RELEASE B 43
17-24	550-FDF-TBD ICD BETWEEN THE FDF AND THE ECS	ECS/HAIS, FDF		RELEASE B 44
9-D	TBD (EOS-AM) ICD BETWEEN ECS AND SSIM	ECS/HAIS, EOS-AM PROJECT/ LOCKHEED MARTIN		RELEASE B 46
(A)	IS20008658B, ICD, DATA FORMAT CONTROL BOOK FOR EOS-AM SPACECRAFT (ICD-106)	EOS-AM PROJECT/ LOCKHEED MARTIN		UNILATERAL RELEASE B 47
6-12	IS20008504B, RADIO FREQUENCY ICD EOS-AM SPACECRAFT TO STDN (ICD-104)	STDN, EOS-AM PROJECT/ LOCKHEED MARTIN		RELEASE B 48
6-14	531-RFICD-EOSAM/WPF RADIO FREQUENCY ICD EOS-AM SPACECRAFT TO WOTS	STDN, WOTS, EOS-AM PROJECT/ LOCKHEED MARTIN		RELEASE B 50
6-18	IS20008696, DIRECT ACCESS SYSTEM USER'S GUIDE (ICD-107) (AM-1)	EOS-AM PROJECT/ LOCKHEED MARTIN		UNILATERAL RELEASE B 51
67-D	560-203.103 ICD BETWEEN SDPF AND TRMM CONSUMER	SDPF, ECS/HAIS, TRMM	505-44-51	RELEASE A 52
(C)	560-EDOS-0230.0001 EDOS DATA FORMAT REQUIREMENTS DOCUMENT (DFRD)	EDOS/TRW		UNILATERAL RELEASE B (IRD LIST) 20
R-D	209-CD-027-002 ICD BETWEEN ECS AND SAGE III	ECS/HAIS, SAGE III, ESDIS	505-41-47	VERSION 2/3/4 53
Y-D	TBD ICS BETWEEN ECS AND SEAWINDS	ECS/HAIS, SEAWINDS, ESDIS, NASDA	505-41-48	VERSION 2 54
S-D	TBD ICD BETWEEN ECS AND RADAR ALTIMETER	ECS/HAIS, RADAR ALTIMETER	505-41-49	VERSION 2/3/4 55
T-D	TBD ICD BETWEEN ECS AND ACRIM	ECS/HAIS, ACRIM	505-41-50	VERSION 2 56
82-24	TBD ICD BETWEEN ETSF AND EOC (PM-1)	ECS/HAIS, PM PROJECT, TRW		VERSION 3/4 57
80-24	TBD ICD BETWEEN EOC AND SDVF (PM-1) (TRW)	ECS/HAIS, PM PROJECT, TRW		VERSION 3/4 58
79-24	TBD ICD BETWEEN EOC AND PM-1 FLIGHT OPERATIONS DATABASE	ECS/HAIS, PM PROJECT		VERSION 3/4 59

Table 2-2. EOSDIS Data Interfaces—ICD and DFCD (3 of 3)

N SQ. NO.	DOCUMENT	PARTIES	ESDIS NO.	COMMENTS
81-24	TBD ICD BETWEEN EOC AND IVV (PM-1) (GSFC)	ECS/HAIS, PM PROJECT, MODSD		VERSION 3/4 60
26-21	TBD ICD BETWEEN EDOS AND EOSDIS GROUND TERMINALS (EGT)	EDOS, MODSD, ESDIS		VERSION 3 61
9-20	540-092 ICD BETWEEN EBnet AND SSIM	EBnet, AM PROJECT/ LOCKHEED MARTIN		VERSION 2 62
10-20	540-095 ICD BETWEEN EBnet AND SAS	EBnet, AM PROJECT/ LOCKHEED MARTIN		VERSION 2 63
8-20	540-095 ICD BETWEEN EBnet AND SDF	EBnet, AM PROJECT/ LOCKHEED MARTIN		VERSION 2 64
H-20	540-047 ICD BETWEEN EBnet AND TSDIS	EBnet ESDIS, TRMM		VERSION 1 65
83-20	TBD ICDs BETWEEN EBnet AND PM MISSION SITES	EBnet, ESDIS, PM PROJECT		VERSION 3 66
(E)	TBD COMMAND AND TELEMETRY HANDBOOK PM-1	ECS/HAIS, ESDIS, PM PROJECT		VERSION 3/4 67
78-13	TBD APPENDIX TO ICD FOR DSN PM-1	DSN/JPL, EDOS/TRW, EBnet		VERSION 3 68
(F)	TBD EOS PM-1 S/C TO EGS ICD (FORMATS AND DFCD)	TRW/PM PROJECT, ESDIS, ECS/HAIS		VERSION 3 69
78-26	TBD EOS PM-1 S/C TO X-BAND GROUND STATION/WOTS	TRW, PM PROJECT, MODSD, WOTS		VERSION 3 70
Z-78	TBD EOS PM-1 S/C TO DIRECT BROADCAST IDD	TRW, PM PROJECT, ESDIS, MODSD		VERSION 3 71
78-83	TBD S/C GROUND SYSTEM TEST DATA ICD (PM-1)	PM PROJECT, ESDIS, MODSD		VERSION 3 72
6-26	TBD X-BAND RF ICD FOR AM-1	AM PROJECT, ESDIS, MODSD		VERSION 3 73
78-12	TBD EOS PM-1 S/C TO TDRSS/GN	PM PROJECT, MODSD, JPL/DSN, WOTS		VERSION 3 74
X-D	ICD BETWEEN ECS AND DAS	ECS/HAIS, ESDIS, DAS		VERSION 2/3/4 75

2.3.1 TRMM Project

Two EOS instruments will be provided to the Tropical Rainfall Measuring Mission (TRMM) Project as a “flight of opportunity,” the Lightning Imaging Sensor (LIS) and the Cloud and Earth’s Radiant Energy System (CERES). The TRMM Project conducts TRMM mission operations. The EOSDIS will provide processing capabilities for the data from these instruments. The TRMM Science Data and Information System (TSDIS) will provide processing capability for the other TRMM instruments. All the TRMM data will be archived in EOSDIS. EOSDIS will retrieve and send data required for TRMM data processing from EOSDIS archives to the TRMM Project’s data processors (TSDIS).

TRMM interface control documentation consists of IRDs and ICDs (Figure 2-1, Table 2-1, and Table 2-2). The mission requirements response (MRR) and DMR to acquire NASA institutional support services are TRMM Project documents.

2.3.2 Landsat-7 Project

The Landsat-7 Project provides Level 0R data from the Landsat Processing System at the Earth Resources Observation System (EROS) Data Center (EDC) to an EOSDIS SDPS archive at the EDC Distributed Active Archive Center (DAAC). EOSDIS maintains the archives, carries advertisements for Landsat-7 data, and distributes the data to requesters.

The MRR and DMR to acquire NASA institutional support services are Landsat-7 Project documents. Interfaces with the National Oceanic and Atmospheric Administration (NOAA) and data acquisition requesters are the responsibility of the Landsat-7 Project.

2.3.3 EOS AM Project

ESDIS, through its projects, contractual efforts, and interfaces with institutional systems, provides the full range of EOSDIS capabilities for the EOS AM Project. Numerous interface documents and lower level requirements documents are called for in this plan.

2.3.4 EOS PM Project

ESDIS provides the full range of EOSDIS capabilities for the EOS PM Project. Numerous interface documents and lower level requirements documents are identified in this plan.

2.3.5 Laser Altimetry

The EOS Laser Altimetry Series of spacecraft will be supported by EOSDIS. Details are TBD.

2.3.6 EOS Chemistry and Special Flights Project

ESDIS provides the full range of EOSDIS capabilities for the EOS Chemistry Spacecraft. Specific EOSDIS capabilities to support the Radar Altimeter spacecraft are TBD. The suite of interface documentation for these projects is yet to be defined.

2.3.7 Flights of Opportunity

Flights of Opportunity (FOOs) managed by center flight projects include Stratospheric Aerosol and Gas Experiment-III (SAGE-III) on the Russian Meteor 3M-1 (Langley Research Center [LaRC], August 1998 launch) and another flight in 2005, and SeaWinds on Japan's Advanced Earth Observing System-II (ADEOS-II) (Jet Propulsion Laboratory [JPL], February 1999 launch). EOSDIS interfaces include Level 0 and ancillary data ingest and standard product distribution. ESDIS interfaces for electronic network communications, instrument operations, and forward/return link processing are defined for SAGE-III but TBD for SeaWinds/ADEOS II. Other FOOs currently being defined are for the CERES instrument in 2000, SAGE-III in 2005, and the Solar/Stellar Irradiance Comparison Experiment (SOLSTICE) in 2008.

2.3.8 Other Flight Projects

EOSDIS will archive and distribute data from various NASA and International Partner Earth Science flight project missions that are in operations during the EOSDIS time frame. Missions being defined include the Active Cavity Radiometer Irradiance Monitor (ACRIM), Jason-1, Space Station, SAVE, and the National Polar Orbiting Environmental Satellite System (NPOESS); these missions have numerous instruments to be supported.

2.3.9 Science Computing Facilities

SCFs are for the use of EOS program investigators. EOSDIS provides communications between ECS and SCFs and toolkits for SCF interactions with the SDPS. For those SCFs involved in instrument operations, ECS provides an Instrument Support Toolkit (IST) at the SCF, which allows communications with the EOS Operations Center (EOC) and which enables spacecraft operations data interpretation, instrument engineering data processing, instrument processor memory dump reception, planning and scheduling status and coordination, instrument command requests to the FOS, and instrument processor loads to the FOS. The ECS/IST interface is considered an ECS internal interface.

2.4 Interfaces With External Organizations

2.4.1 NOAA-Affiliated Data Centers

Data products from NOAA and NASA missions are exchanged via interfaces between NOAA data centers and the EOSDIS SDPS.

2.4.2 NOAA Operational Data Systems

Data from EOS instruments, required by NOAA for operational purposes, are provided by an EDOS interface.

2.4.3 Ministry of International Trade and Industry—Japan

The Ministry of International Trade and Industry (MITI) provides the Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) instrument on EOS AM-1 in addition to providing the Instrument Control Center (ICC) and Science Data Processing System for ASTER. Interfaces for operations will be provided cooperatively between ECS and MITI, EBnet and MITI, EDOS and MITI, and the ASTER SCF (JPL) and MITI.

2.4.4 National Space Development Agency of Japan

TRMM, ADEOS, and ADEOS II are cooperative missions between NASA and the National Space Development Agency of Japan (NASDA). EOSDIS will provide interfaces for Level 0 and ancillary data ingest and distribution of ADEOS/SeaWinds and related data, and higher level datasets for the Advanced Microwave Scanning Radiometer (AMSR). In addition, EOSDIS will provide interfaces for Level 0, ancillary data, and higher level dataset ingest and distribution of TRMM and related data. EOSDIS will also provide communications interfaces for SeaWinds science data processing and SeaWinds instrument operations. The Ozone Dynamics Ultraviolet Spectrometer (ODUS) mission is a collaborative effort between NASA and NASDA, with the details of the partnership currently being negotiated.

2.4.5 Canadian Space Agency

The Canadian Space Agency (CSA) provides the Measurements of Pollution in the Troposphere (MOPITT) instrument for the EOS-AM-1 mission. EOSDIS interfaces are with the MOPITT SCF.

2.5 Interfaces With EOSDIS Projects and From Contracts

2.5.1 ECS

The ECS Contract effort is developing the FOS, the SDPS, and the CSMS for EOSDIS. The ECS interfaces with all other projects associated with EOSDIS.

2.5.2 ETS Project

The EOSDIS Test System (ETS) Project provides test capabilities for EOSDIS. Physical interfaces are with EBnet and EDOS. Data interfaces are with ECS, EDOS, and the Spacecraft Integration and Test Facility (SCITF).

2.5.3 EDOS Project

EDOS receives telemetry and sends command streams through the Tracking and Data Relay Satellite System (TDRSS) and the EOSDIS Ground Terminals (EGT) to/from EOS. EDOS receives command transmissions from the ECS/FOS via EBnet. EDOS processes the telemetry bit streams into datasets, archives them, and delivers dataset files to ECS and other projects or facilities via EBnet or physical media.

When radio frequency (RF) communications with EOS spacecraft are not through the TDRSS or EGT, EDOS sends command bit streams and receives telemetry bit streams from the Deep Space Network (DSN) stations, the Wallops Orbital Tracking Station (WOTS), the Ground Network (GN) stations, the SCITF, the launch site station, and EOSDIS Test System interfaces via EBnet.

2.5.4 EBnet Project

EBnet provides the operations communications capabilities and interfaces among the various EGS elements, such as between NISS and ECS, between NISS and EDOS, between EDOS and ECS, between EDOS and the DAACs, and in other circumstances such as for Landsat data at EDC and to the ASTER GDS in Japan.

2.5.5 Reserved

2.5.6 EOS Ground Stations

The EOS Ground Stations and the AM-1 backup ground stations acquire instrument data directly from the EOS spacecraft. These stations interface directly with the EDOS Ground Station Facility (GSF) at the sites that replicate the EDOS capabilities at the White Sands facility.

2.5.7 EOSDIS Version 0

EOSDIS Version 0 is a project to create the initial capabilities of this system by building on existing discipline-specific Earth science data centers and data systems and by developing a “pathfinder” activity to create datasets from existing operational data that are critical to global change research. The EOSDIS Version 0 system and ECS are interoperable, allowing transfer of archives to ECS from data systems and archives accessible by the Version 0 system.

2.6 Interfaces With NASA Institutional Systems

2.6.1 Reserved

2.6.2 NASA Science Internet

The NSI provides communications between ECS and SCFs, between ECS and other EOS investigators, and between ECS and the Internet. NSI also provides communications management services to CSMS. The NSI is operated by the Ames Research Center.

2.6.3 Reserved

2.6.4 Wallops Orbital Tracking Station

WOTS provides emergency radio communications with in-orbit EOS spacecraft. Nascom and EBnet provide ground communications between WOTS and EDOS for transfer of command and telemetry data. The WOTS is operated and maintained by GSFC.

2.6.5 NASA Communications

NASA Communications (Nascom) provides operations communications network services within NASA, including operations communications and operations communications interfaces with international and other national operations facilities. Nascom is implemented and operated by GSFC.

2.6.6 Flight Dynamics Facility

The GSFC Flight Dynamics Facility (FDF) provides operational orbit determination, orbit predictions, and maneuver parameters to ECS. The FDF provides TDRS Onboard Navigation System (TONS) operations support and maintenance. The FDF provides attitude determination and attitude control evaluation to ECS. ECS provides housekeeping telemetry parameters and TBD to FDF. The FDF is operated and maintained by GSFC.

2.6.7 Reserved

2.6.8 Network Control Center

The Network Control Center (NCC) provides network management services to the ECS for Space Network (SN) services and coordination of other ground station support scheduling. The NCC is implemented, operated, and maintained by GSFC.

2.6.9 TDRSS Ground Terminals

The TDRSS Ground Terminals (TGTs) provide the command and telemetry interfaces between the SN and EDOS for EOS flight missions. GSFC maintains and operates the TGTs.

2.6.10 Sensor Data Processing Facility

The Sensor Data Processing Facility (SDPF) performs data capture, Level 0 processing, and dataset distribution for non-EOS science missions such as TRMM. The SDPF is operated and maintained by GSFC.

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